

## Claims

What is claimed is:

- [c1] A method for finding a worst case aggressor set of a victim net based on a plurality of logically exclusive sets, comprising:
- forming a first set, wherein the first set comprises an aggressor net of the victim net;
  - using the first set and the plurality of logically exclusive sets to formulate a problem; and
  - solving the problem to determine a worst case aggressor net of the victim net, wherein the worst case aggressor set comprises the worst case aggressor net.
- [c2] The method of claim 1, wherein the plurality of logically exclusive sets comprises a mutually exclusive set, and wherein the mutually exclusive set comprises a signal net.
- [c3] The method of claim 1, wherein the aggressor net in the first set has a corresponding weight.
- [c4] The method of claim 1, the problem comprising:
- finding the worst case aggressor net of the victim net.
- [c5] The method of claim 1, further comprising:
- forming a second set, wherein the second set comprises an aggressor net that is in the first set and that is part of the plurality of logically exclusive sets.
- [c6] The method of claim 5, further comprising:
- forming a third set, wherein the third set comprises an aggressor net that is

in the first set but is not part of the second set.

- [c7] The method of claim 6, wherein the aggressor net in the third set becomes part of the worst case aggressor set.
- [c8] The method of claim 5, comprising:  
reducing each of the plurality of logically exclusive sets to a second plurality of logically exclusive sets such that a net in a set of the second plurality of logically exclusive sets is part of the second set.
- [c9] The method of claim 8, wherein an empty set in the second plurality of logically exclusive sets is removed from the second plurality of logically exclusive sets.
- [c10] The method of claim 8, the problem comprising:  
using a first representation to represent a net in the second set;  
using a second representation to represent a set in the second plurality of logically exclusive sets; and  
creating an association between the first representation and the second representation when the net is part of the set.
- [c11] The method of claim 10, wherein the first representation is a first node, and wherein the second representation is a second node.
- [c12] The method of claim 10, wherein the association is an edge.
- [c13] The method of claim 10, further comprising:  
selecting the second representation;  
selecting an adjacent net of the second representation such that the adjacent net has a weight greater than another adjacent net of the first representation;  
adding the adjacent net to the worst case aggressor set;

removing an association of the second representation;  
removing the second representation;  
removing an association of the adjacent net;  
removing the adjacent net; and  
returning the worst case aggressor set when there are no representations of  
the sets of the second plurality of logically exclusive sets remaining  
in the problem.

- [c14] The method of claim 1, wherein the problem is represented graphically.
- [c15] The method of claim 12, wherein the graphical representation is a bipartite graph.
- [c16] A software tool that finds a worst case aggressor set of a victim net, comprising:  
a processor;  
a memory; and  
software instructions residing in the memory and executable in the  
processor for performing a series of operations to find a worst case  
aggressor net based on a plurality of logically exclusive sets.
- [c17] The software tool of claim 16, wherein the plurality of logically exclusive sets  
comprises a mutually exclusive set, and wherein the mutually exclusive set  
comprises a signal net.
- [c18] The software tool of claim 16, further comprising:  
a portion that forms a first set, wherein the first set comprise an aggressor  
net of the victim net;  
another portion that forms a second set, wherein the second set comprises  
an aggressor net that is part of the first set and that is part of the  
plurality of logically exclusive sets;  
another portion that forms a third set, wherein the third set comprises an

aggressor net that is part of the first set but is not part of the second set;

another portion that reduces the plurality of logically exclusive sets to a second plurality of logically exclusive sets such that a net in a set of the second plurality of logically exclusive sets is part of the second set; and

another portion that formulates a problem based on the second set and the second plurality of logically exclusive sets.

[c19] The software tool of claim 18, wherein the problem is represented graphically.

[c20] The software tool of claim 19, wherein the graphical representation is a bipartite graph.

[c21] The software tool of claim 18, wherein the aggressor net in the first set has a corresponding weight.

[c22] The software tool of claim 18, wherein the worst case aggressor set comprises an aggressor net in the third set.

[c23] The software tool of claim 18, wherein an empty set in the second plurality of logically exclusive sets is removed from the second plurality of logically exclusive sets.

[c24] The software tool of claim 18, the problem comprising:

a portion that uses a first representation to represent a net in the second set;  
another portion that uses a second representation to represent a set in the second plurality of logically exclusive sets; and  
another portion that creates an association between the first representation and the second representation when the net is part of the set.

[c25] The software tool of claim 24, wherein solving the problem determines the worst case aggressor net, the software tool further comprising:

- a portion that selects a set in the second plurality of logically exclusive sets;
- another portion that selects an adjacent net of the set such that the adjacent net has a weight greater than another adjacent net of the set;
- another portion that adds the adjacent net to the worst case aggressor set;
- another portion that removes an association of the set;
- another portion that removes the set;
- another portion that removes an association of the adjacent net;
- another portion that removes the adjacent net; and
- another portion that returns the worst case aggressor set when there are no sets of the second plurality of logically exclusive sets remaining.

[c26] A method for solving a problem to find a worst case aggressor net based on a logically exclusive set, comprising:

- using a first representation to represent the logically exclusive set;
- selecting the first representation;
- selecting a second representation, wherein the second representation represents an adjacent net of the first representation;
- removing an association of the first representation;
- removing the first representation;
- removing an association of the second representation;
- removing the second representation; and
- returning the adjacent net represented by the second representation as the worst case aggressor net.

[c27] The method of claim 26, wherein the first representation is a first node, and wherein the second representation is a second node.

- [c28] The method of claim 26, wherein the association of the first representation is an edge, and wherein the association of the second representation is an edge.
- [c29] The method of claim 26, wherein the adjacent net represented by the second representation has a weight greater than another net in the problem.
- [c30] The method of claim 26, wherein the problem is represented graphically.
- [c31] The method of claim 26, wherein the graphical representation is a bipartite graph.
- [c32] A software tool, comprising:  
a processor;  
a memory; and  
software instructions residing in the memory and executable in the processor for performing a series of operations for solving a problem to find a worst case aggressor net based on a logically exclusive set.
- [c33] The software tool of claim 32, further comprising:  
a portion that uses a first representation to represent the logically exclusive set;  
another portion that selects the first representation;  
another portion that selects a second representation, wherein the second representation represents an adjacent net of the first representation;  
another portion that removes an association of the first representation;  
another portion that removes the first representation;  
another portion that removes an association of the second representation;  
another portion that removes the second representation; and  
another portion that returns the adjacent net represented by the second representation as the worst case aggressor net.
- [c34] The software tool of claim 33, wherein the adjacent net represented by the second

representation has a weight greater than another net in the problem.

[c35] The software tool of claim 32, wherein the problem is represented graphically.

[c36] The software tool of claim 35, wherein the graphical representation is a bipartite graph.

[c37] A method for formulating a problem to find a worst case aggressor net of a victim net based on a logically exclusive set, comprising:

using a first representation to represent a net, wherein the net is an aggressor net of the victim net and is part of the logically exclusive set;

using a second representation to represent a set, wherein the set is the logically exclusive set; and

selectively creating an association between the first representation and the second representation when the net is part of the set.

[c38] The method of claim 37, wherein the first representation is a first node, and wherein the second representation is a second node.

[c39] The method of claim 37, wherein the association is an edge.

[c40] A software tool, comprising:

a processor;

a memory; and

software instructions residing in the memory and executable in the processor for performing a series of operations for formulating a problem to find a worst case aggressor net of a victim net based on a logically exclusive set.

[c41] The software tool of claim 40, further comprising:

a portion that uses a first representation to represent a net, wherein the net is an aggressor net of the victim net and is part of the logically exclusive set;

another portion that uses a second representation to represent a set, wherein the set is the logically exclusive set; and

another portion that selectively creates an association between the first representation and the second representation when the net is part of the set.